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ABSTRACT

The purpose of this study was to examine Japanese children's lexico-semantic development in English. Twenty-one bilingual Japanese 10- and 11-year-olds who resided with their families in New York City for an average of 2 years and 5 months participated in the study. The children were asked to write down as many Japanese color names as they could think of in 30 seconds. The obtained order of the color terms was interpreted within the framework of Berlin and Kay's (1969) universal hierarchy of color terms. The children were then asked to respond to the emotive tone of Japanese and English color terms. The children showed certain systematicity in their responses to the emotive tone of the color words. It is argued that their responses may have been triggered by universalic sensations inherent in a given color, cultural transmission, area-specific socio-cultural conditions, or idiosyncratic experiences. Contains 19 references. (MDM)

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A STUDY ON BASIC COLOR TERMS: LEXICO-SEMANTIC DEVELOPMENT IN JAPANESE-ENGLISH BILINGUALS IN NEW YORK

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A STUDY ON BASIC COLOR TERMS: LEXICO-SEMANTIC DEVELOPMENT IN JAPANESE-ENGLISH BILINGUALS IN NEW YORK

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This study was concerned with Japanese children's lexico-semantic development in English. Color terms were selected as the domain of this study. First, Japanese color names were elicited from subjects, aged 10 and 11 by asking them to write down as many color terms as they could think of within 30 seconds. The obtained order of color terms was interpreted within the framework of Berlin and Kay's (1969) universal hierachy of color terms. Also, Miller and Johnson-Laird's (1976) "landmark-color" hypothesis and Rosch's (1973) "prototype" theory provided some account of the results.

The same subjects were also asked to respond to the emotive tone of Japanese and English color terms. Some systematicity was observed in their responses. It was argued that the systematicity would be attributed to: (i) universal sensations inherent in a given color; (ii) cultural transmission; (iii) area-specific socio-cultural conditions, and (iv) idiosyncratic, personal experiences (cf. Hayakawa, 1953).

Fundamentally, research on second language (henceforth, L2) acquisition is guided by the following question: What factors constrain the developmental process of L2 learning? The nature of such factors is socio-affective, cognitive, physical, neurological, and linguistic (cf. Brown, 1980). This study, we were primarily interested in the linguistic domain.

Within the linguistic domain, considerable attention has been paid to *phonological* (cf. Tarone, 1978) and *syntactic* (cf. Dulay, Burt & Krashen, 1982) components of L2 learning. Recently, some researchers have started to investigate puzzling problems in relation to L2 discourse and pragmatics (cf. Larsen-Freeman, 1981). However, relatively little attention has been so far paid to lexico-semantic development in L2 learners (Tanaka, forthcoming), although intuitively we may argue that lexico-semantic errors tend to hinder inter-cultural communication more significantly than other types of error.

This study was an attempt to explore some aspect of lexico-semantic development in L2 learners. The domain selected for this study was the associated or emotive meanings of English and Japanese color terms as perceived by Japanese-English bilingual children in New York.

Color terms have been extensively investigated by linguists, anthropologists, and psychologists (cf. Miller & Johnson-Laird, 1976; Berlin & Kay, 1969; Rosch,

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1973; Lyons, 1968). Hence, the literature in the field is enormous and highly technical; a detailed review of the literature is beyond the scope of this paper. However, we would like to note a few points which are relevant to our research questions.

First, research on color terms, by and large, centers around their cognitive or denotative meanings (cf. Rosch, 1973). For example, possible color sensations can be defined with respect to lightness, hue, and saturations (cf. Maerz & Paul, 1930). In this study, we were not so much interested in cognitive meaning as associative or emotional meaning. We assumed two things. First, color sensations can affect human emotions. Colors can be described as *bright*, *clear*, *light*, *dark*, *vivid*, *warm*, *soft*, and so on. Thus, different colors will give us different sensations. Second, we assumed that there would be some cultural differences in terms of the associated meanings of color terms. A well-known case is the comparison between Japanese *aoi* and English *blue*. Connotatively, *aoi* suggests "immature" as in *ao nisai*, whereas *blue* suggests "sad" or "depressed" as in *John is still blue*. On the basis of these assumptions, we asked the following questions:

(1) (a) Is there any systematic pattern in the responses by Japanese-English bilingual children to the associated meaning of a given color word?
(b) Do their responses to English color words differ from their responses to the Japanese counterparts?

We may also note that many researchers in the past were interested in the Sapir-Whorf hypothesis, according to which different cultures would partition and label color differently and those linguistic differences would lead to some perceptual/cognitive differences among speakers of different languages (cf. Brown & Lenneberg, 1954).

However, this linguistic relativism has been questioned and re-evaluated by some researchers (cf. Berlin & Kay, 1969; Heider & Oliver, 1972; Hickerson, 1971). Berlin and Kay (1969) investigated basic color terms cross-culturally, and found, contrary to linguistic relativism, that there are certain focal colors (i.e., the core exemplars of the basic color terms) that are the same across the languages they investigated. This led Berlin and Kay (1969) to argue for the "universalic" hierarchy for color terms:

(2) Black & White > Red > [Yellow / Green] > Blue > Brown > [Pink / Orange / Gray / Purple]

This hierarchy suggests that there are languages that have only two color terms (e.g., some Papuan languages of New Guinea). It also says that if a language has three basic color terms, it has a term for red, and that if a language has four basic color terms, it has a term for yellow or green, besides the terms for red, black, and white, and so on.

Berlin and Kay (1969) suggested that the hierachical pattern in (2) characterizes languages existing today, and that, hence, it might have characterized languages

throughout man's history. Their suggestions, in turn, invite the speculation that the hierarchical order of terms *black* & *white*, *red*, *yellow*/*green*, *blue*, *brown*, and *pink*/*orange*/*gray*/*purple* would represent a universal pattern of language development in children.

There are, indeed, some studies that suggest that the acquisition of color terms by children tend to follow, not strictly though, the Berlin and Kay's pattern (Bornstein, 1975; Hopmann, 1972). In this study, we assumed that if we ask children to write down as many color words as they can think of within thirty seconds, then the obtained results would show some pattern in ordering (Battig & Montague, 1969). On the basis of this assumption, we asked:

(3) Is the order of color terms, as defined in terms of frequency, interpretable within the Berlin and Kay's framework?

The purpose of this study was to explore questions (1a), (1b) and (3).

Method

Twenty one Japanese-English bilingual children participated in this study. They were ten or eleven years old, and had stayed in New York for two years and five months on the average (SD = 32 months). The subjects were all students at some American school; they were also students at Japanese Weekend School in New York, where they studied Japanese on Saturdays. This study was conducted at Japanese Weekend School.

A questionnaire was designed to investigate the three questions stated above. The questionnaire consisted of two parts. Part I was concerned with question (3). The subjects were given thirty seconds to write down as many color names as possible. No special instructions were given, because the task was quite straightforward. Since most subjects were Japanese-dominant bilinguals, they were encouraged to give color names in Japanese.

Part II was concerned with questions (1a) and (1b). We selected six English basic color terms *red*, *blue*, *green*, *yellow*, *white* and *black* and their corresponding Japanese color words. Twelve pairs of adjectives in pair (see Appendix A) were presented to the subjects along with one verbal stimulus (i.e., one color word). Twenty four adjectives in total were selected, following Akaike's (1981) comparative study about English and Japanese color terms. The basic criterion was that the twenty-four adjectives were equally divided into two semantic categories: positive and negative. The criterion *positive-negative* polarity was used so that we could easily classify all responses obtained could be easily classified into two categories. Thus, the subject's responses to a given color word were characterized as typically *positive*, *negative*, or *neutral*. If the subject's responses are typically positive or negative, then we may say that there are certain patterns in their responses. If the responses are typically neutral, then careful item-by-item analyses would be necessary to see if any pattern exists.

The twelve adjectives in pair were randomly ordered so as to offshoot possible response biases. The same set of twelve adjectives in pairs were randomly ordered so as to avoid possible response biases. The same set of twelve adjectives in pairs was used for twelve verbal stimuli (i.e., six Japanese and six English words) because we felt that the set of 12 adjectives in pair could sufficiently characterize each subject's responses to any color word.

For the adjectives in pair, we used both English and Japanese so as to clarify the meaning of the adjectives used. For example, the word *mean* is polysemous; however, the Japanese word *gehin*, if attached to *mean*, helps clarify the intended meaning of the word mean. The design we used can be illustrated as follows:

(4)

		1	*2*
21 Subjects	A (N = 10):	J^a	E^a
	B (N = 11):	E^b	J^b

Thus, twenty one subjects were randomly assigned to one of the two groups *A* and *B*. Group *A* first responded to six Japanese words; Group *B*, to six English words. Then, Group *A* was given six English words; Group *B*, six Japanese words.

Procedurally, the subjects were asked to close their eyes for a few seconds and to think of the emotional meanings attached to the color word in question. The subjects were, then, asked to go over each adjective item, and to choose three adjectives that they thought would best fit what they thought about the emotive meaning of the word. In other words, the subject selected only three adjectives out of twenty four alternatives.

Results and Discussion

Let us first look at the question stated in (3): Is the order of color terms, as defined in terms of frequency, interpretable within the Berlin and Kay's framework? The results were tabulated so as to determine which color words were most frequently included in the subject's responses.

The eleven color terms most frequently giken were, in order of decreasing frequency: Red>Blue>Black>White>Green> Yellow>Purple>Orange>Brown >Pink>Gray. The first color word most frequently written by the subjects was *red*. The results here roughly correspond to those obtained by Battig and Montague (1969), who asked 442 college students to write down as many color names as they could think of within 30 seconds. They found that *red* was the first color word that appeared in 319 subjects' lists, and that the following were the twelve color words most frequently used: Blue>Red>Green>Yellow>Orange>Black>Purple >White>Pink>Brown>(Violet)>Gray.

Let us compare our results with Battig and Montague's (1969) with reference to Berlin and Kay's (1969) hierarchy as follows:

(5) A: Black & White>Red>[Yellow / Green]>Blue>Brown>[Pink / Orange / Purple / Gray]

[Berlin & Kay (1969)]

B: Blue>Red>Green>Yellow>Orange>Black>Purple>White>Pink>Brown>(Violet)>Gray [Battig & Montague (1969)]

C: Red>Blue>Black>White>Green>Yellow>Purple>Orange>Brown>Pink>Gray

In (5), C is the order of color terms obtained from our study. With reference to our research question (3), we may note that both (5B) and (5C) contain eleven basic color terms as defined by Berlin and Kay (1969). At present, we have no strong evidence which allows us to make any specific claims about the obtained order of color words. However, the comparison of (5B) and (5C) invites the speculation that eleven basic color terms defined by Berlin and Kay (1969) are psychologically the most readily available to speakers of English and Japanese, whether child or adult.

Miller and Johnson-Laird (1976: 345) attempt to define *color* with respect to the following six "landmark" colors: *white-black*, *red-green*, and *blue-yellow*. Miller and Johnson-Laird (1976) put forth their "landmark" color hypothesis as follows:

> We conclude that these six primary color sensations represent landmark colors. Anyone with normal color vision will be able to recognize these landmarks and to estimate how much each of them contributes to any particular sample whose color he is asked to identify (p. 345).

It is interesting to note that the six words *white/black*, *red/green*, and *blue/yellow* follows Berlin and Kay's hierarchy (from I to IV), and that the first six color terms obtained from our subjects represent all "landmark" colors. For the Battig and Montague's order, if *orange* is replaced by *white* so as to make the order of color names consistent with Miller and Johnson-Laird's (1976) hypothesis.

Perhaps, Rosch's (1973) prototype theory is relevant here. Prototype theory highlights the "internal structure" of categories. By "internal structure", Rosch (1973) means that "categories are composed of a 'core meaning' which consists of the 'clearest cases' (best examples) of the category, 'surrounded' by other category members of decreasing similarity to that core meaning" (p. 112).

In our case, the best examples of the category *color* would be the six "landmark" colors suggested by Miller and Johnson-Laird (1976). In linguistic terms, we may say that the six landmark colors and their labels are "unmarked", while other non-landmark colors and their labels are relatively "marked". Normally, with unmarked items, we tend to observe few individual variations; with marked items, considerable individual variations will be observed. This seems to account for the relative uniformity of the order of six landmark color terms shown in (5), and for considerable variations with respect to non-landmark colors in (5).

Let us also note that in (5B–C), *red* and *blue* seem to represent the best examples of the category *color*, as far as a "prototypicality ranking" (Rosch, 1973) is concerned. According to Rosch (1973), the prototype tends to be learned and recalled more easily and more quickly than peripheral members. For example, *violet* may not be a psychologically prototypical color, since violet is a flower first, a color second. Hence, *violet* would be considered a peripheral member of the category *color*. It would be, then, interesting to speculate why *red*, for example, tends to come to our mind most readily, and to be considered the "best" example of color.

Perhaps, it is because the most salient colors tend to be the most frequently used colors; hence, *red* is a candidate. Miller and Johnson-Laird (1976) note:

> People who speak...three-term languages [white, black, and red] are often surrounded by green foliage, blue skies and water; against such a background *red* is a striking visual quality. Moreover, red is associated with both blood and fire, which have emotional and sometimes ritual connotations (p. 348).

What is suggested above is the possibility that both bilingual children and monolingual adults tend to define categories like color with respect to prototypes or "exemplariness." (Rosch, 1973).

Although the simple procedure of asking subjects to list color names revealed some interesting points, the obtained order of color words in (5C) does not permit us to make any specific claims about the question of how bilingual children perceive

the associated meanings of color terms in their native and target languages. We will now turn to the results relating to questions (1a) and (1b): (1a) Is there any systematic pattern in the responses by Japanese-English bilingual children to the associated meaning of a given color word?; (1b) Do their responses to English color words differ from their responses to the Japanese counterparts?

Returning to (4), response patterns observed in J^a and E^b were similar to those observed in E^a and J^b; there was also no significant difference between J^a and J^b, and between E^a and E^b. Hence, the data J^a and J^b were pooled. Likewise, the data E^a and E^b were pooled. By pooling the data, we obtained 63 responses to each verbal stimulus.

The subject's responses to each stimulus were classified into either the positive or the negative category, and the proportional difference between the two categories was analyzed by means of χ^2. The summary data are given in Table 1.

If the responses to a given stimulus are characterized as either *positive* or *negative*, then we may say that the responses in question have some pattern or agreement among the subjects. When the difference between positive and negative responses turned out to be insignificant, then we may characterize the subject's responses to the stimulus in question as *neutral*. However, the interpretation of a neutral response is more difficult than that of a positive or negative response, for "statistically no significant" does not necessarily mean that there was no agreement among subjects with respect to their responses to the stimulus in question. Before touching on this point, let us provide the following charts:

(6) A. *English Color Words*:

Negative (−)	Neutral (0)	Positive (+)
←	●	→
[Black]	[Yellow]	[Blue Green White Red]

B. *Japanese Color Words*:

Negative (−)	Neutral (0)	Positive (+)
←	●	→
[kuro ('black')]	[kiiro ('yellow') shiro ('white') aka ('red')]	[ao ('blue') midori ('green')]

The question here is whether or not the subject's responses to the emotive features of color words showed patterns or agreement among subjects. In the case of six English "landmark" color words, only *yellow* was perceived as neutral. The dominant features selected for *black* were *mean*, *dirty*, *dangerous*, and *bad*. On the other hand, *blue*, *green*, *white*, and *red* were perceived as positive colors in their emotive tone. For example, the dominant features for *green* were *elegant*, *fresh*, *safe*, and *clean*.

Yellow was perceived as neutral in its emotive tone. However, the subjects did not randomly select their "best" three choices for that color word; rather, the

Table 1. The Summary Data for the Emotive Tone of Basic Color Terms in English and Japanese

Verbal Stimuli	Positive	Negative	$\chi^2(df=1)$
AKA	36 (57%)	27 (43%)	1.29 (NS)
BLUE	49 (78%)	14 (22%)	19.44 ($p.<.001$)
BLACK	14 (22%)	49 (78%)	19.44 ($p.<.001$)
WHITE	44 (70%)	19 (30%)	9.92 ($p.<.01$)
RED	43 (68%)	20 (32%)	8.20 ($p.<.01$)
MIDORI	46 (73%)	17 (27%)	13.35 ($p.<.001$)
GREEN	41 (65%)	22 (35%)	5.73 ($p.<.02$)
YELLOW	37 (58%)	26 (42%)	1.92 (NS)
AO	51 (81%)	12 (19%)	24.14 ($p.<.001$)
KIIRO	36 (57%)	27 (43%)	1.29 (NS)
SHIRO	39 (62%)	24 (38%)	3.57 (NS)
KURO	9 (14%)	54 (86%)	32.14 ($p.<.001$)

Appendix A

Blue

☐	(mean)	下品な	← →	上品な	(elegant)	☐
☐	(healthy)	健康な	← →	不健康な	(unhealthy)	☐
☐	(dirty)	きたない	← →	きれいな	(clean)	☐
☐	(bad)	悪い	← →	正しい	(good)	☐
☐	(cold)	冷たい	← →	あたたかい	(warm)	☐
☐	(positive)	陽気な	← →	陰気な	(negative)	☐
☐	(safe)	安全な	← →	危険な	(dangerous)	☐
☐	(unhappy)	不幸な	← →	幸せな	(happy)	☐
☐	(passive)	消極的な	← →	積極的な	(active)	☐
☐	(fresh)	新鮮な	← →	古びた	(old)	☐
☐	(coward)	おく病な	← →	勇ましい	(courageous)	☐
☐	(exciting)	刺激的な	← →	つまらない	(dull)	☐

following positive features were emphatically used: *warm*, *happy*, and *healthy*. We may note that subjects were given twelve positive alternatives. Of the twelve alternatives, *warm*, *happy* and *healthy* were most frequently used by those who perceived *yellow* as positive. However, there were also those subjects who perceived *yellow* as negative. Again, their responses were characteristically *dull*, *unhealthy*,

and *negative*. Thus, the subject's responses to the emotive tone of *yellow* were relatively systematic with regard to the selection of specific semantic features that characterized their responses, whether positive or negative.

By and large, the subject's responses to the emotive tone of English color words were relatively systematic. The same holds true in the case of Japanese color words. However, there are some differences between (6A) and (6B). That is, while *black*/*kuro*, *yellow*/*kiiro*, *blue*/*ao*, and *green*/*midori* in (6) remain the same in their polarity positions regardless of the language of verbal stimuli, the subject's responses to *white*/*shiro* and *red*/*aka* vary as a function of the language of the stimuli. *White* and *red*, when they are loan words in Japan, are perceived as positive in their emotive tone, while *shiro* and *aka*, as netural. What is the explanation for this difference?

Perhaps, one explanation is that loan words in Japanese tend to have positive connotations, (and hence, the language of advertisement in Japan has been characterized by the use of loan words). Truly, all the English color words used in this study are familiar to most Japanese; they are part of the Japanese lexicon. It seems that the "loan-word" account offers many explanations. However, let us consider the following:

(7)

White	*shiro*	*Red*	*aka*
clean (+)	clean (+)	warm (+)	warm (+)
elegant (+)	elegant (+)	dangerous (−)	dangerous (−)
cold (−)	cold (−)	courageous (+)	healthy (+)
good (+)	fresh (+)	exciting (+)	exciting (+)

Here, the comparison between *white* and *shiro*, and between *red* and *aka* shows no marked difference in terms of the proportion of positive and negative features used to characterize the emotive tone of each color word. Both *white* and *shiro* have three positive (+) and one negative (−) features; both *red* and *aka* have three positive and one negative features. The difference between (6A) and (6B) is attributed to the fact that for *white* and *red*, the subjects emphasized more positive features than negative ones; for *shiro* and *aka*, the subjects emphasized both positive and negative features equally. The point is, however, that both *white* and *shiro*, for example, have the same negative feature.

What is suggested above is two-fold. First, the subject's responses to color terms seem to vary as a function of the language of stimuli; this is relevant to question (1b). Second, to say that loan words in Japanese tend to have more positive connotations than their corresponding Japanese words does not fully explain the difference between (6A) and (6B), because, as mentioned above, both *white* and *shiro* have the same negative feature, namely *cold*.

Perhaps, the feature *dangerous* attached to *red* and *aka* in (7) may have been acquired through cultural transmission. Both in Japan and in the United States, the color *red*/*aka* symbolizes "danger", as in the traffic light. Perhaps, the loan-word account has some validity with respect to the difference between *red* and *aka*. Some Japanese informants pointed out that the word *red* "sounds better" than the word *aka*; perhaps, the principle of *sound symbolism* is operating here (cf. Tanaka,

1981), in addition to the Japanese general preference for loan words. (At any rate, the loan-word account will be subsumed under the operating principle of cultural transmission.)

As pointed out earlier, the negative feature *cold* was frequently used to characterize the emotive tone of *white* and *shiro*. Perhaps, the feature *cold* is associated with snow, which is the best exemplar of *white*. However, *white* has the evaluative feature *good*, which is missing in *shiro*. In this reagrd, let us consider the following:

(8)

Black	*kuro*
mean (−)	mean (−)
bad (−)	bad (−)
dirty (−)	dirty (−)
dangerous (−)	unhappy (−)

The antonym of good, *bad*, is used for *black* and *kuro*. For *black*, the feature *dangerous* is used; likewise, for *kuro*, the feature *unhappy* is used. The question is: What are possible sources for the subject's responses to these color words?

There may be at least four sources or factors influencing the subject's responses in general: (i) universal sensations inherent in a given color; (ii) cultural transmission; (iii) area-specific socio-cultural conditions; and (iv) idiosyncratic experiences (cf. Hayakawa, 1953). These factors are no doubt interrelated. For example, we learn that *red* means "danger" through cultural transmission. However, why is *red* used for signalling "danger"? Perhaps, it is because *red* has a more striking visual quality than other colors; hence, *red* is perceptually salient. Factor (ii) is related to factor (iii); the difference is a matter of degree. Factor (iv) is most clearly illustrated with reference to an individual's preference for a given color; some people like *green*, some like *black*, and so on.

It is suggested in (8) that "area-specific social conditions" play a dominant role in motivating certain responses to a given verbal stimulus. In particular, the words *black* and *white* are commonly used to refer to people, while the word *shiro* does not normally refer to white people. Traditionaly, the Japanese have had a good image of white people, which may explain why *white*, not *shiro*, has the evaluative word *good*, as shown in (7). However, the word *kuro* is used to refer to black people in a derogatory sense. This may explain why an adjective like *unhappy* is used for *kuro*. Thus, it seems that the subject's responses to *black*, *white*, and *kuro* were influenced, for example, by those black and white people that the subjects happened to know in their neighborhoods, or by their parents' opinions about and attitudes toward black and white Americans. However, we are not certain, specifically, how the area-specific socio-cultural conditions interact with the lexico-semantics of bilingual children. This is an area to be investigated in the future.

What is suggested above is that lexico-semantic development in bilingual children is constrained not only by linguistic but also by socio-cultural conditions. The meaning potential of a word has at least three components: (i) cognitive meaning, (ii) conventionalized associated meaning, and (iii) personal, emotive meaning. Perhaps, we could assume that the personal emotive meaning of a word is highly constrained by socio-cultural factors.

Finally, let us briefly look at some linguistic factors that would constrain lexico-semantic development in bilingual children. By and large, we had a strong impression that subjects used the same or similar features for English stimuli and their corresponding Japanese stimuli as well. In fact, almost half of the total responses (48%) within the subjects were identical, irrespective of the language of verbal stimuli. This suggests that the subjects for this study were "compound bilinguals", who had a single semantic base, rather than "coordinate bilinguals," who have separate semantic bases for L1 and L2.

However, some L1 ('first language') transfer was observed. For example, subjects emphatically used the feature *fresh* for *green* and *blue* as well. In Japanese, *ao* ('blue') is associated with "freshness" as in *aoyasai* ('greens') and *aoba* ('green leaves'). Also, the subjects stressed the feature *safe* for *blue*. The Japanese *ao* is used for the traffic signal, in addition to *aka* ('red') and *kiiro* ('yellow'). When the traffic signal is *ao* ('blue'), it is safe to walk across the road in Japan.

Although we have no strong evidence to advance a theory of semantic transfer (Tanaka, forthcoming), it appears that the child's lexico-semantic system in his L2 develops through the interaction with what he already knows in his native language. That is, the L2 learner's L1 semantic schemata seems to have an important role in the development of his lexico-semantic system in the target language.

SUMMARY

In this study, we were concerned with Japanese children's lexico-semantic development in English. The findings and arguments may be summarized as follows:

(i) The order of color names elicited from Japanese-English bilinguals basically corresponds to Berlin and Kay's (1969) universal hierarchy of color terms, and, more clearly, to Miller and Johnson-Laird's (1976) "the landmark hypothesis". Also, the results were interpretable within the framework of Rosch's (1973) "prototype" theory, which captures "internal structure" of categories.

(ii) On the basis of (i), it was suggested that bilingual children use a strategy of picking up the best examples of categories to organize their semantic field. Hence, internal structure of the child's semantic field may be essentially the same as that of the monolingual adult's semantic field, as far as prototype concepts are concerned.

(iii) Japanese-English bilingual children showed certain systematicity in their responses to the emotive tone of color words. It was argued that their responses may have been triggered by several factors including: (i) universalic sensations inherent in a given color, (ii) cultural transmission, (iii) area-specific socio-cultural conditions, and (iv) idiosyncratic, personal experiences.

(iv) There were, however, some differences in their responses to the emotive tone of color words according to the language of verbal stimuli. It was suggested that those differences would be attributed to (i) positive connotations attached

to loan words, and (ii) area-specific socio-cultural conditions.

(v) Finally, some instance of language transfer was pointed out. Perhaps, lexico-semantic development in a second language will proceed, always interacting with the learner's L1 semantic schemata.

This study interestingly explains many things in nature. Therefore, future research should indicate more specifically what factors constrain lexico-semantic development in L2 learners.

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